Geometry 1-5 Study Guide: Using Formulas in Geometry (pp 36-37)

Attendance Problems. Evaluate. Round to the nearest hundredth.

1. 12^2 **2.** 7.6^2 **3.** $\sqrt{64}$

4. $\sqrt{54}$ **5.** $3^2(\pi)$ **6.** $(3\pi)^2$

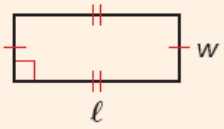
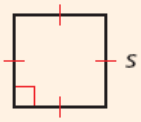
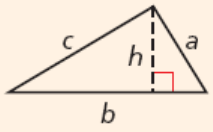
I can apply formulas for perimeter, area, and circumference.

Common Core

CC.9-12.A.SSE.1 Interpret expressions that represent a quantity in terms of its context.*
CC.9-12.A.CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

7. Compare and contrast perimeter and area.

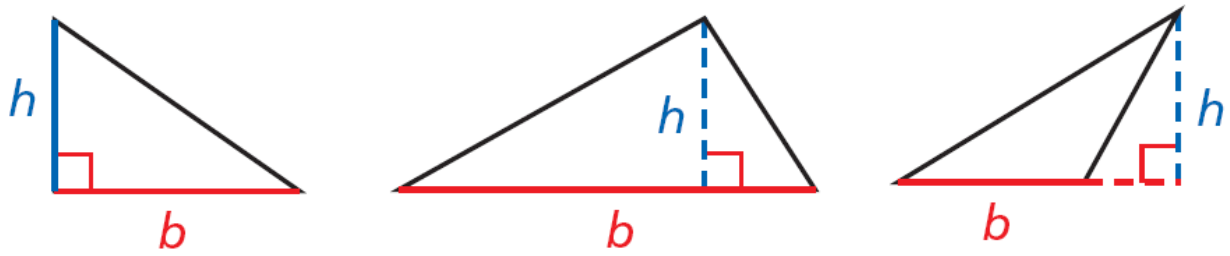
Perimeter and Area

RECTANGLE	SQUARE	TRIANGLE
		
$P = 2\ell + 2w$ or $2(\ell + w)$ $A = \ell w$	$P = 4s$ $A = s^2$	$P = a + b + c$ $A = \frac{1}{2}bh$ or $\frac{bh}{2}$

Question: What is the hidden math term?

Answer: Square root

The **base** ***b*** can be any side of a triangle. The **height** ***h*** is a segment from a vertex that forms a right angle with a line containing the base. The height may be a side of the triangle or in the interior or the exterior of the triangle.



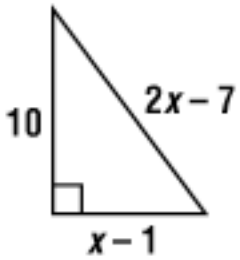
Remember!

Perimeter is expressed in linear units, such as inches (in.) or meters (m). Area is expressed in square units, such as square centimeters (cm^2).

Video Example 1. Find the perimeter and area of each figure.

A. A rectangle with length 3 cm and height 11 cm.

B.



1 Finding Perimeter and Area

Find the perimeter and area of each figure.

A rectangle in which $\ell = 17$ cm and $w = 5$ cm

$P = 2\ell + 2w$

$= 2(17) + 2(5)$

$= 34 + 10 = 44$ cm

$A = \ell w$

$= (17)(5) = 85$ cm^2

B triangle in which $a = 8$, $b = (x + 1)$, $c = 4x$, and $h = 6$

$P = a + b + c$

$= 8 + (x + 1) + 4x$

$= 5x + 9$

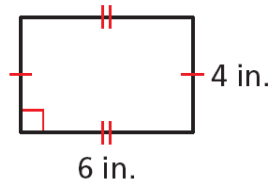
$A = \frac{1}{2}bh$

$= \frac{1}{2}(x + 1)(6) = 3x + 3$

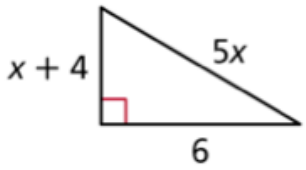
Things are not as simple as they seems at first. - *Edward Thorp*

Example 1. Find the perimeter and area of each figure.

A.



B.



8. Guided Practice. Find the perimeter and area of a square with s = 3.5 in.

Video Example 2: The Texas Treasure quilt block includes 8 white squares. A side of each square is about 3 inches. Find the the approximate amount of of fabric used to make the make the 8 squares.

2 Crafts Application

The Texas Treasures quilt block includes 24 purple triangles. The base and height of each triangle are about 3 in. Find the approximate amount of fabric used to make the 24 triangles.

The area of one triangle is

$$A = \frac{1}{2}bh = \frac{1}{2}(3)(3) = 4\frac{1}{2}\text{ in}^2.$$

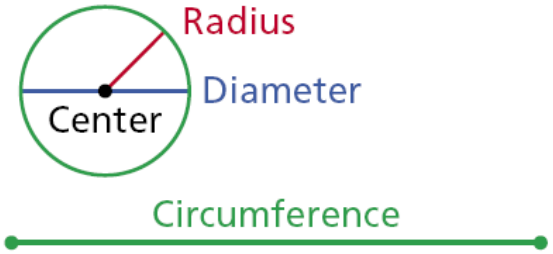
The total area of the 24 triangles is

$$24\left(4\frac{1}{2}\right) = 108\text{ in}^2.$$

Example 2: The Queens Quilt block includes 12 blue triangles. The base and height of each triangle are about 4 in. Find the approximate amount of fabric used to make the 12 triangles.

9. Guided Practice. Find the amount of fabric used to make four rectangles. Each rectangle has a length of $6\frac{1}{2}$ in and a width of $2\frac{1}{2}$ in.

In a circle a **diameter** is a segment that passes through the center of the circle and whose endpoints are on a circle. A **radius** of a circle is a segment whose endpoints are the center of the circle and a point on the circle. The **circumference** of a circle is the distance around the circle.



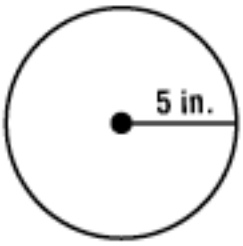
Circumference and Area of a Circle

The circumference C of a circle is given by the formula $C = \pi d$ or $C = 2\pi r$.

The area A of a circle is given by the formula $A = \pi r^2$.

The ratio of a circle's circumference to its diameter is the same for all circles. This ratio is represented by the Greek letter π (pi). The value of π is irrational. Pi is often approximated as 3.14 or $\frac{22}{7}$.

Video Example 3: Find the circumference and area of the circle.

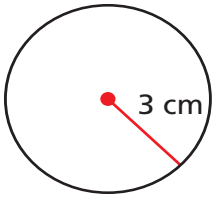


3 Finding the Circumference and Area of a Circle

Find the circumference and area of the circle.

$C = 2\pi r$
$= 2\pi(3) = 6\pi$
≈ 18.8 cm

$A = \pi r^2$
$= \pi(3)^2 = 9\pi$
≈ 28.3 cm^2



Example 3: Find the circumference and area of a circle with radius 8 cm. Use the Π key on your calculator. Then round the answer to the nearest tenth.

10. Guided Practice. Find the circumference and area of a circle with radius 14 m.

1-5 Using Formulas in Geometry *(p 38)* 11, 12, 13, 15, 16, 23, 24, 27, 29, 30, 34, 36, 38, 42, 44-46.

Dog Cartoon #6443

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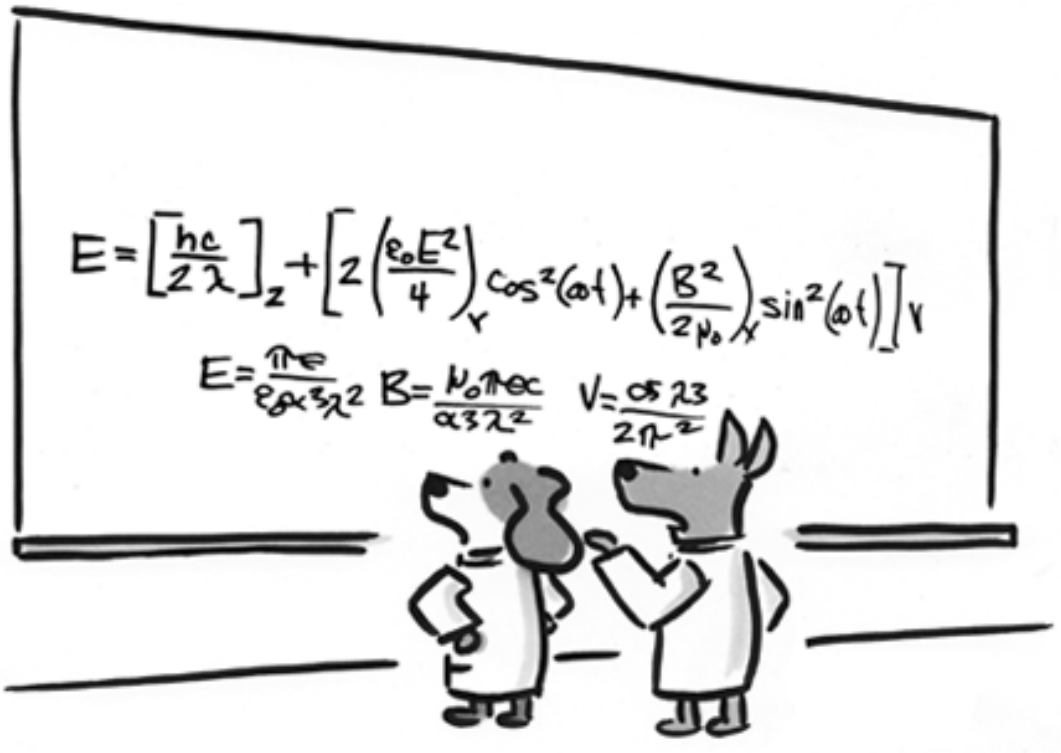

"There it is. You forgot to convert to dog years."